RCRA PRELIMINARY ASSESSMENT SUMMARY

Region VI, Technical Compliance Section

FACILITY'S NAME(S): Sun Refinery & Marketing Company

EPA ID NUMBER: OKD 058078775

ADDRESS: P.O. Box 2039, Tulsa, Oklahoma 74102

LOCATION: 1700 S. Union, Tulsa, Oklahoma 74102

PREPARED BY: Harding Lawson Ass. DATE PREPARED: 3/3/86

REVIEWED BY: John S. Kim DATE REVIEWED: 5/13/86

ANTICIPATED DRAFT PERMIT DATE: will not be issued in FY 86

ANY ON-GOING STATE/FED 264, 265, or 270 CORRECTIVE ACTION:
Visual Site Inspection was conducted on 6/30/86 - 7/1/86. Report will be finalized August '86 recommending a RI.

DOES FACILITY HAVE A CERCLA FILE? YES X NO ____

CERCLIS HAZSIT NUMBER: OK 01911

TYPE OF DRINKING WATER SUPPLY WITHIN A 3-MILE RADIUS:
Drinking water info not available. Nearest surface water is the Arkansas River, which is right next to the facility.
TARGET POPULATION WITHIN A 3-MILE RADIUS:
North, west, east of facility is surrounded by residential areas.

RECOMMENDATIONS: X S.I. ____ N.I. ____ I.M. ____ 3004(u) ____ 3004(v)

____ 3007 ____ No Further Action

Revised: 4/30/86

I. Preliminary Assessment of Prior or Continuing Releases of Solid Waste Management Units (SWMUs)

A. Evaluation of Information

1. The main purpose is to determine whether there has been or may have been a release(s) of hazardous waste or hazardous constituents from any SWMUs which will require corrective action measures under Section 3004(u) of the RCRA Hazardous and Solid Waste Amendments (HSWA) of 1984. The SWMUs units of concern are:

a) SWMUs not regulated under RCRA; and

b) SWMUs regulated under RCRA regardless of whether they are subject to ground water monitoring requirements.

2. The purpose of this review is to:

a) Identify all SWMUs;

b) Identify if there has been prior or continuing releases of hazardous wastes or hazardous constituents from such units to any media (air, surface water, ground water, soil & subsurface gas);

c) Identify if such releases caused environmental contamination that would require corrective action; and

d) Determine what additional information or investigation is needed to clarify whether there has been a release or if a potential for a release exists.

B. NUMBER OF SOLID WASTE MANAGEMENT UNITS (SWMU): 131

LIST OF SWMU	REGULATED BY RCRA*	STATUS**	SUBJECT TO GWM SUBPART F
(1) Aldco Landfill	?	I	?***
(2) West Landfarm	Y	I	Y
(3) TEL Weathering Pad	Y	I	N
(4) Asphalt Sludge Landfill	N	I	N
(5) North Petroleum Landfill	N	I	N
(6) Northeast Landfill	Y	I	Y
(7) East Landfill	?	I	?***
(8) Scrap Metal Landfill	Y	I	Y
(9) Concrete Sump	?	I	?***

* Y - Yes
N - NO
? - unknown

** Active or Inactive (A or I)
GWM-Ground Water Monitoring

*** Determination cannot be made without additional

LIST OF SWMU	REGULATED BY RCRA*	STATUS	SUBJECT TO GWM SUBPART F
(10) Grit Removal Treatment	N	A	N
(11) Neutralization Treatment	N	A	N
(12) Clarification/Separation	N	A	N
(13) Dissolved Air Flotation	N	A	N
(14) Equalization Basin	N	A	N
(15) Activated Sludge Treatment	N	A	N
(16) Baffling/Flotation Tank	N	A	N
(17) Settling/Sedimentation Tank	N	A	N
(18) Aerobic Digestion Tank	N	A	N
(19) Flotation Thickening Tank	N	A	N
(20) Solids Storage Tank	N	A	N
(21) No 2 Spray Pond	N	A	N
(22) Cat-Cracker Landfill	?	I	?
(23) Scrap Metal Landfill	Y	I	Y
(24) Allison Property Landfill	N	I	N
(25) Storm Impoundment Basin	Y	A	Y
(26) East Land Treatment	Y	A	Y
(27) Central Land Treatment	Y	A	Y
(28) West Land Treatment	Y	SEA	Y
(29) Waste Pile	Y	I	Y
(30) Oily Sludge Roads	N	A	N
(31) Tank Diked Areas	N	A	N
*			
*			
*			
(131) Tank Diked Areas	N	A -	N

C. NUMBER OF SWMU AT WHICH RELEASES HAVE BEEN IDENTIFIED: 4

LIST OF SWMU	RELEASE TO	NOTED DOCUMENTATION OF RELEASE
(1) SWMU 1	GW	Contamination of toulene & benzene in RCRA wells 22 & 24.
(2) SWMU 2	GW	Contamination of toulene & benzene in RCRA well 36.
(3) SWMU 3	GW	Lime stone barrier between unit and River, to neutralize any acidic release to GW. Core samples show pH levels of 1.0 to 2.0.

LIST OF SWMU	RELEASE TO	NOTED DOCUMENTATION OF RELEASE
(4) SWMU 6	GW	EPA May 24, 1984, A CERCLA SI recommended GWM wells be installed around the unit. Past releases have occurred.

D. NUMBER OF SWMU AT WHICH A RELEASE IS HIGHLY POSSIBLE: 15

(SIs should be conducted for each SWMU in this category unless an RI under C. has been indicated which will include this SWMUs).

LIST OF SWMU	REASONS (i.e., waste characteristics, depth of GW, soil permeability, etc.)
(1) SWMU 7	GW less than 20 ft., doughtful liner exists, due to age of unit.
(2) SWMU 8	GW 10 ft., doughtful liner exists, due to age of unit.
(3) SWMU 10	EPA fined Sun $100,000 for noncompliance with with NPDES permits. (past releases of hazardous waste or hazardous constituents may be likely).
(4) SWMU 11	SWMU 10 thru SWMU 20 are part of waste treat-
(5) SWMU 12	ment. Reasoning for SWMU 11 thru SWMU 20
(6) SWMU 13	are same as in SWMU 10.
(7) SWMU 14	"
(8) SWMU 15	"
(9) SWMU 16	"
(10) SWMU 17	"
(11) SWMU 18	"
(12) SWMU 19	"
(13) SWMU 20	"
(14) SWMU 24	Unit ceased operation in 1982. Sludge sample analyzed in 1982, had oil content of 27.5%, sulfur content of 6.9%, and pH < 1.5.
(15) SWMU 25	Unit contaminated with (U345), which is directly discharged into the river via NPDES permit. The permit does not require monitoring of hazardous constituents.

E. NUMBER OF SWMU WHERE A DETERMINATION OF RELEASE CAN NOT BE MADE DUE TO LACK OF INFORMATION: 112

(SIs should be conducted for each SWMU in this category unless an SI under C. has been indicated which will include this SWMUs).

LIST OF SWMU

(1) SWMU 3
(2) SWMU 4
(3) SWMU 5
(4) SWMU 21
(5) SWMU 22
(6) SWMU 23
(7) SWMU 26
* *
* *
(112) SWMU 131

F. NUMBER OF SWMU WITH NO INDICATED RELEASES: 0
(Documentation is necessary for a SWMU to be included in this category).

II. RECOMMENDATIONS: (EPA, STATE and/or CONTRACTOR)

Summary of recommended action made by Harding Lawson Ass. are attached to this PA Summary.

Almost all of the recommended actions made by Harding Lawson Ass. are appropriate. However, the contractor recommended that a SI be conducted for SWMUs (1) & (2) because GW contamination was highly possible. Based on the PA (pp. 21 & 26), GWM wells located downgradient to these SWMUS showed low levels of toluene and benzene. above. In addition, at SWMU 26-131 it should be determined if these units hold product or waste.

CONCUR: Greg C. Detrecht DATE: 6/13/88

SUMMARY OF RECOMMENDATIONS

Recommendations for further investigation of SWMUs at the Sun Tulsa Refinery, previously described in each unit section, are summarized below. Additional information which should be obtained before initiating a site investigation is listed at the end of this report.

RECOMMENDED INVESTIGATION ACTIVITIES

SWMU	Summary of Recommendations
1. Midco Landfill	Request information on waste characterization and closure procedures. Determine extent of wastes remaining. Sample soil and ground water, if necessary.
2. West Landfarm	Request information on past operations and closure procedures. Gather and evaluate all available ground-water data. Conduct site investigation and sample soil and ground water.
3. TEL Weathering Area	Review construction details of unit during site investigation. Request information on unit cleanup and closure measures during site investigation. Sample soil, if necessary.
4. Asphalt Sludge Landfill	Request information on construction details and closure procedures. Identify whether hazardous materials are present.
5. North Petroleum Sludge Landfill	Request information on construction details, cleanup efforts, and closure procedures. Conduct remedial investigation and sample soils and ground water for VOC and BNA constituents and subsurface gas.
6. Northeast Landfill	Request information on construction details and closure practices. Conduct remedial investigation and sample soils and ground water for VOC and BNA constituents and subsurface gas.

SWMU	Summary of Recommendations
7. East Landfill	Conduct site investigation. Request information on construction details and closure practices. Gather existing soils and ground-water data and review for releases. Sample air for vapor releases.
8. Scrap Metal Landfill	Request information on construction details and closure procedures. Determine particulate and surface-water release potential.
9. Concrete Sump	Request information on construction and operating details, and closure procedures.
10. Wastewater Treatment System	Gather available data on the concentrations and volume of constituents discharged. Gather available receiving water monitoring data, and evaluate for potential impacts on beneficial uses. Gather available ground-water data and evaluate for releases. Sample air for vapor releases during site investigation. Gather design and operating information on each unit.
11. No. 2 Spray Pond	Request information on waste characterization.
12. Cat-Cracker Landfill	Request information on construction details. Characterize wastes. Investigate closure procedures. Determine potential for releases.
13. Scrap Metal Landfill	Request information on construction details and closure procedures. Verify release conclusions.
14. Allison Property Landfill	Conduct remedial investigation. Investigate construction details. Investigate closure procedures. Inspect cover. Sample soils and ground water for VOC and BNA constituents.
15. Storm Impoundment Basin	Conduct remedial investigation and sample discharge for hazardous constituents.
16. 120-Acre Land Treatment Areas	Request information in order to verify Sun's statements relative to vapor releases. Modify Part B monitoring program to include vapor monitoring.

SWMU	Summary of Recommendations
17. Waste Pile	Request information and determine if this unit is the same as unit SWMU 8 or 13; if not, determine location and closure procedures. Characterize wastes. Determine potential for releases.
18. Oily Sludge Roads	Request information to charcterize wastes. Determine location of roads. Determine construction and maintenance details. Determine potential for releases.
19. Tank Diked Areas	Determine location and frequency of spills. Characterize wastes. Investigate the method and location of oily soil disposal. Determine potential for releases.

Additional Site Investigation Recommendations

Sun has indicated that hydrocarbons have appeared on the ground-water surface at various locations beneath the refinery property (1, page III-96). Since 1981, Sun has had an active program to assess the locations of hydrocarbon pools and to recover floating hydrocarbons (1, page III-96). It appears that widespread soil and ground-water contamination may exist at the site. Therefore, information should be obtained regarding Sun's program (1, Page III-96) to assess the locations of hydrocarbon pools under the refinery and to recover the floating hydrocarbons. This information should be reviewed to determine the relationship to any of the SWMUs, the extent of site contamination, and the need for further investigation and/or remedial action.

A complete summary and analysis of all available soil and ground-water data collected at the refinery should be obtained. Information should be

gathered regarding the use of ground water and surface water as a drinking water source. This information should, at a minimum, include the location and depth of drinking water wells (both public and private), the location of surface-water intakes, and the quality of these waters.

In addition, consideration should be given to installing off-site upgradient monitoring wells in areas where industrial operations have been minimal. These wells should be used rather than the upgradient wells described the Part B application.

Priority for Action

Efforts should be directed first toward gathering the information identified immediately above. This information should be reviewed to determine the extent of contamination at the refinery site and the potential for human exposure to contaminants via ground water through private and public drinking water wells.

The second priority is to gather the information listed at the end of this report ("Requirements for Additional Information"). The responses to the questions listed should be reviewed to determine if hazardous constituents are being released from the many closed SWMUs located at the refinery. Information was available on the method and location of disposal of a number of wastes generated at this site, including spent jet fuel treating clay, spent Davis filter media, oily soil, coke fines, cooling tower sludge, spent Udex Hydeal clay, spent ion exchange resin, spent feed dryer clay, heat exchange bundle cleaning sludge, and Furfural. Information obtained on the

method and location of disposal should be reviewed to identify any additional SWMUs.

The third priority is to conduct the site inspections and sampling recommended in the preceding table. The information gathered as part of Priority 2 should be used to refine the data requirements for site inspections and sampling efforts.

REFERENCES

1. Sun Refining and Marketing Company, 1985. RCRA Part B Permit Application, Vols. I, II, III, and IV (Tulsa Refinery), EPA Form 3510-1, September Rev., Tulsa, Oklahoma.

2. Sun Refining and Marketing Company, 1985. Letter from R. E. Callahan to W. R. Clark, May 24, Tulsa, Oklahoma.

3. EPA, 1985. Tentative Disposition, EPA Form T2078-4, Tulsa, Oklahoma.

4. EPA, undated. Application for Permit to Discharge Wastewater, EPA Form 3510-2c.

5. EPA, 1980. Site Inspection Report, EPA Form T2070-3, March 3, Tulsa, Oklahoma.

6. EPA, 1984. Site Inspection Report, EPA Form T2070-3, May 24, Tulsa, Oklahoma.

7. EPA, 1981. Potential Hazardous Waste Site Identification and Preliminary Assessment, EPA Form T2070-2, August 11, Tulsa, Oklahoma.

8. EPA, 1980. Potential Hazardous Waste Site Identification and Preliminary Assessment, EPA Form T2070-2, March 31, Tulsa, Oklahoma.

9. EPA, 1980. Potential Hazardous Waste Site Identification and Preliminary Assessment, EPA Form T2070-2, April 9, Tulsa, Oklahoma.

10. Oklahoma State Depatrment of Health, 1984. RCRA Inspection, July 19, Tulsa, Oklahoma.

11. Oklahoma State Department of Health, 1980. Controlled Industrial Waste Disposal Plan, November 11, Tulsa, Oklahoma.

12. Sun Marketing and Refining Company, 1980. Notification of Hazardous Waste, EPA Form 8700-12, August 8, Tulsa, Oklahoma.

13. Oklahoma State Department of Health, 1981. RCRA Inspection, September 9, Tulsa.

14. Oklahoma State Department of Health, 1983. Oklahoma Controlled Industrial Waste Compliance Inspection, June 28, Tulsa.

15. Oklahoma State Department of Health, 1984. Controlled Industrial Waste Generator's Listing, February 3, Tulsa.

16. Oklahoma State Department of Health, 1984. Controlled Industrial Waste Compliance Inspection, July 19, Tulsa.

17. Oklahoma State Department of Health, 1982. RCRA Inspection, July 13, Tulsa.

18. Oklahoma Department of Health, 1976. Letter from L. R. Rachels to D. Fears, Rogers Company Health Department, April 16, Oklahoma City.

19. No Author, 1983. Tanks Checklist, June 29.

20. EPA, 1979. Potential Hazardous Waste Site Identification and Preliminary Assessment, November 11, Tulsa, Oklahoma.

21. Tulsa Refining, Inc., 1981. Notification of Hazardous Waste Site, EPA Form 8900-1, June 9, Tulsa, Oklahoma.

REQUIREMENTS FOR ADDITIONAL INFORMATION

The information described on the following page should be obtained from Sun and evaluated as indicated previously in this report.

1. Provide information on waste characterization for SWMU 1, 11, 12, 17, 18, and 19.

2. Provide data on construction details (cover, liner, run-on/run-off control measures), age of unit, and closure details for SWMUs 1 through 9, 12 through 14, and 17 through 19.

3. Provide data on the extent of wastes remaining within SWMU 1.

4. Provide the past two years of effluent monitoring data for the discharge from the wastewater treatment system (SWMU 10). A summary of violations including explanations should also be submitted. The study required under U.S. Civil Action No. 79-C-441D should be submitted, if available, or a time schedule should be submitted for when it would be completed. Data on the physical condition of the treatment system structures, including overflow and alarm systems, should also be submitted.

5. All available vapor monitoring data for SWMU 16 should be submitted.

6. Identify the location and frequency of spills associated with the tank diked areas (SWMU 19). Also, data on the method and location of disposal of wastes from the cleanup of the spills should be provided.

7. Identify the method and location for disposal of the spent jet fuel treating clay. Also, identify the nature of the oil distillate waste generated as part of removing the clay from the towers. Provide data on the method and location of disposal for the oil distillate waste.

8. Identify the method and location of disposal for the spent Davis filter media, coke fines, spent Udex/Hydeal clay, spent feed dryer clay, heat exchanger bundle cleaning sludge, and Furfural.

9. Information should be submitted on the location and method used to store the waste identified as spent caustic containing phenol.

10. Provide a complete summary and analysis of all soils and ground-water data collected at the refinery site. This information should include a map that identifies the location of all wells and construction details for all wells that are not included in the Part B permit application.

11. Provide information on the use of ground water and surface water for the community surrounding the refinery. This information should, at a minimum, include the location and depth of private and public drinking water wells, the location of surface water intakes, and the quality of these waters.

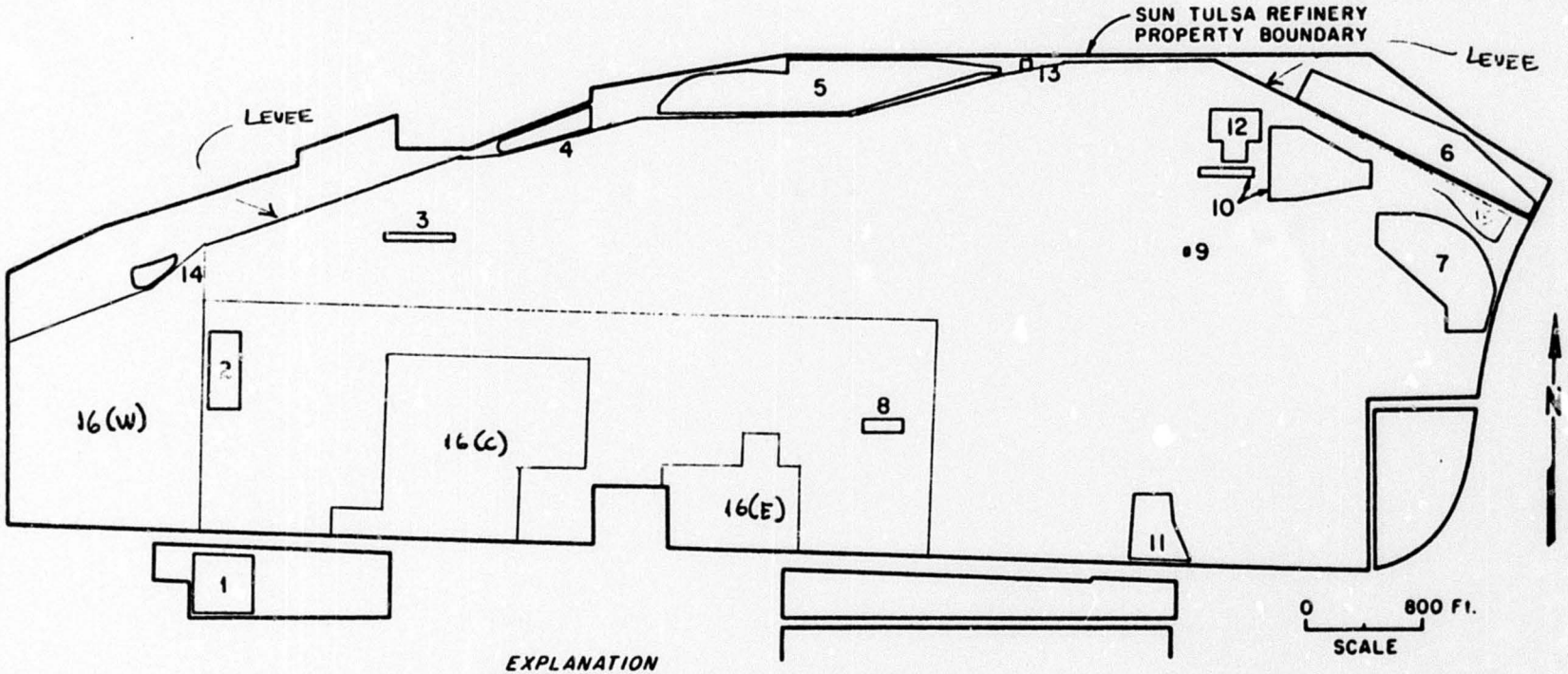
12. Provide details relative to surface runoff for the refinery site.

13. Provide all available information on Sun's program to assess the location of hydrocarbon pools under the refinery and to recover the floating hydrocarbons. The results of this program should also be submitted.

14. Provide information on the method and location of disposal of the following wastes: spent jet fuel treating clay, spent Davis filter media, oily soil, coke fines, cooling tower sludge, spent Udex/Hydeal clay, spent ion exchange resin, spent feed dryer clay, heat exchange bundle cleaning sludge, and Furfural.

15. Provide information on the conditions and operation of the acid neutralization tank used in the alkylization process.

16. Provide information on the conditions and operational details associated with the rail cars used to store the spent caustic containing phenol.



EXPLANATION

1. MIDCO LANDFILL
2. WEST LANDFARM
3. TEL WEATHERING AREA
4. ASPHALT SLUDGE LANDFILL
5. NORTH PETROLEUM SLUDGE LANDFARM
6. NORTHEAST LANDFILL
7. EAST LANDFILL
8. SCRAP METAL LANDFILL
9. CONCRETE SUMP
10. WASTEWATER TREATMENT SYSTEM (includes sludge treatment unit)
11. #2 Spray Pond
12. CAT-CRACKER LANDFILL
13. SCRAP METAL LANDFILL
14. ALLISON PROPERTY LANDFILL
15. Storm Impoundment Basin
16. (E,C&W). 120 Acre Land Application Area
17. Waste Pile (?)
18. Oily Sludge Roads
19. Tank Diked Areas

FIGURE 1 SOLID WASTE MANAGEMENT UNITS, SUN TULSA REFINERY

[redacted]